New Supervisory Orientation

NASA Education and the Marshall Space Flight Center Academic Affairs Office

Presented by:
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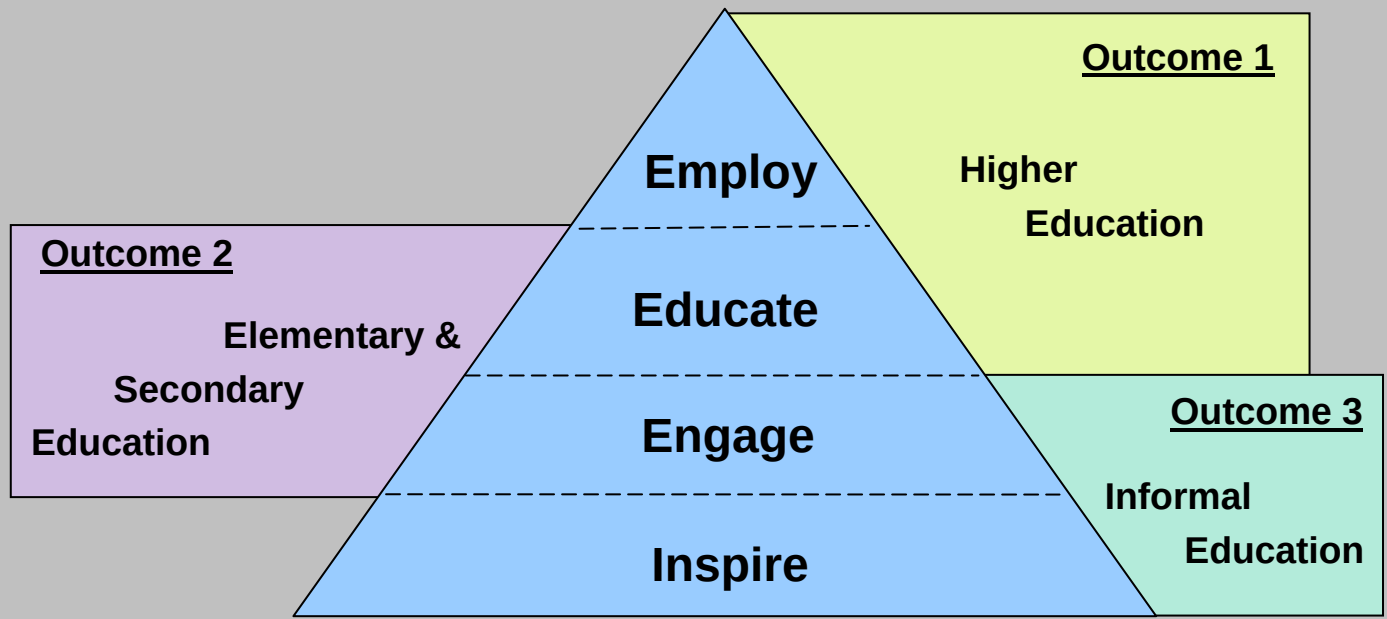
Academic Affairs Office

November 28, 2007

NASA's Education Strategy

NASA's educational activities are designed to Inspire, Engage, Educate, and Employ our Nation's youth.

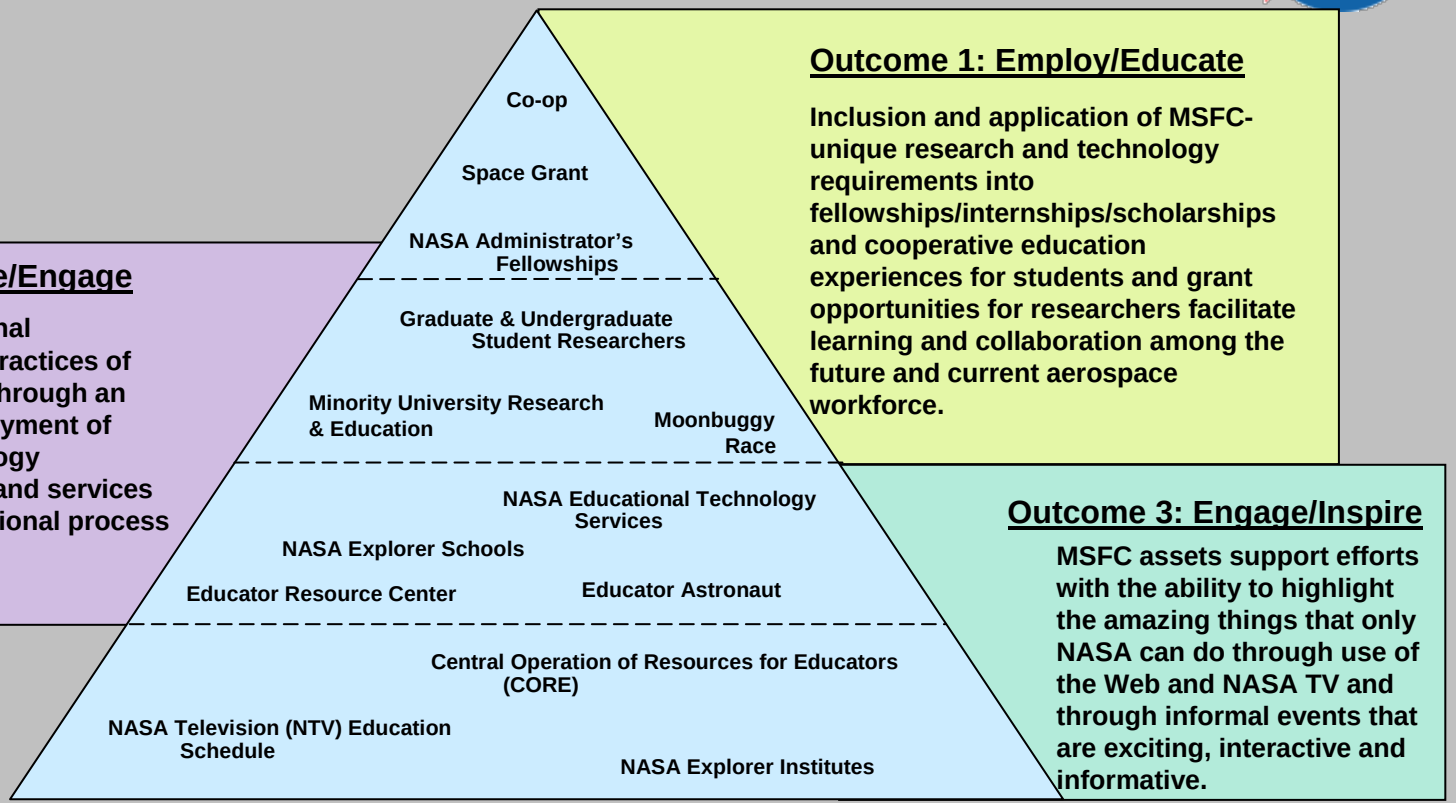


Outcome 1: Contribute to the development of the science, technology, engineering, and mathematics (STEM) workforce in disciplines needed to achieve NASA's strategic goals.

Outcome 2: Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers and faculty.

Outcome 3: Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.

Role of MSFC within NASA's Education Strategy



Outcome 1: Employ/Educate

Inclusion and application of MSFC-unique research and technology requirements into fellowships/internships/scholarships and cooperative education experiences for students and grant opportunities for researchers facilitate learning and collaboration among the future and current aerospace workforce.

Outcome 2: Educate/Engage

MSFC targets professional development and best practices of inquiry-based learning through an infrastructure and deployment of research-based technology applications, products, and services that enhance the educational process for formal education.

Outcome 3: Engage/Inspire

MSFC assets support efforts with the ability to highlight the amazing things that only NASA can do through use of the Web and NASA TV and through informal events that are exciting, interactive and informative.

Workforce Coalition: Education Task Force
Developing Partnerships for Workforce Connections

Teachers

Technology and
Problem-Based Learning
Training

Interactions and Collaboration

Business Personnel

Pedagogical and
Communication/Connections
Training

Students

Ethics and Life Long Learning Skills
Hands-on Team Activities and Apprenticeships
Problem-Based Learning and Skills Application
Skills Alignment for Workforce Needs

Parents

Media

Community

Team America Rocketry Challenge
Student Launch Initiative
University Student Launch Initiative

- **The NASA Student Launch projects mentor student teams as they design, build, and launch a reusable rocket, with scientific payload, to one-mile in altitude.**

- Student Launch includes teams from middle schools, high schools and universities. Middle and high school teams are selected from the top 25 winning teams in the Team America Rocketry Challenge (TARC), a Nationwide rocketry competition.

- A major component of our Student Launch projects is outreach to younger students. Some existing outreach plans include: girl scouts, middle schools, local TARC teams, and aerospace/engineering classes.

- Current Partners include: National Space Grant Consortium, the National Association of Rocketry, the Aerospace Industries Association, and Boeing.

Great Moonbuggy Race

- **14th annual competition for high school and college students to be held April 4-5, 2008.**
- **Encourages problem-solving in a team environment.**
- **Students design, build, and race two-person powered buggies over simulated lunar terrain.**
- **25 high school and 22 college teams from 20 states, Puerto Rico, Germany and Canada participated in the 2007 race.**

moonbuggy.msfc.nasa.gov

NASA Explorer Schools

- **Partnership promotes NASA content and inquiry-based activities relative to science, technology, engineering and mathematics (STEM) disciplines (with emphasis on grades 4-9)**
- **With NASA support, schools develop strategic goals and implementation plans to guide their progress**
- **150 active NASA Explorer Schools nationwide (11 in Marshall Space Flight Center (MSFC) six-state service region)**

Digital Learning Network (DLN)

- **Videoconferencing for NASA Education (facilities at all 10 NASA centers)**

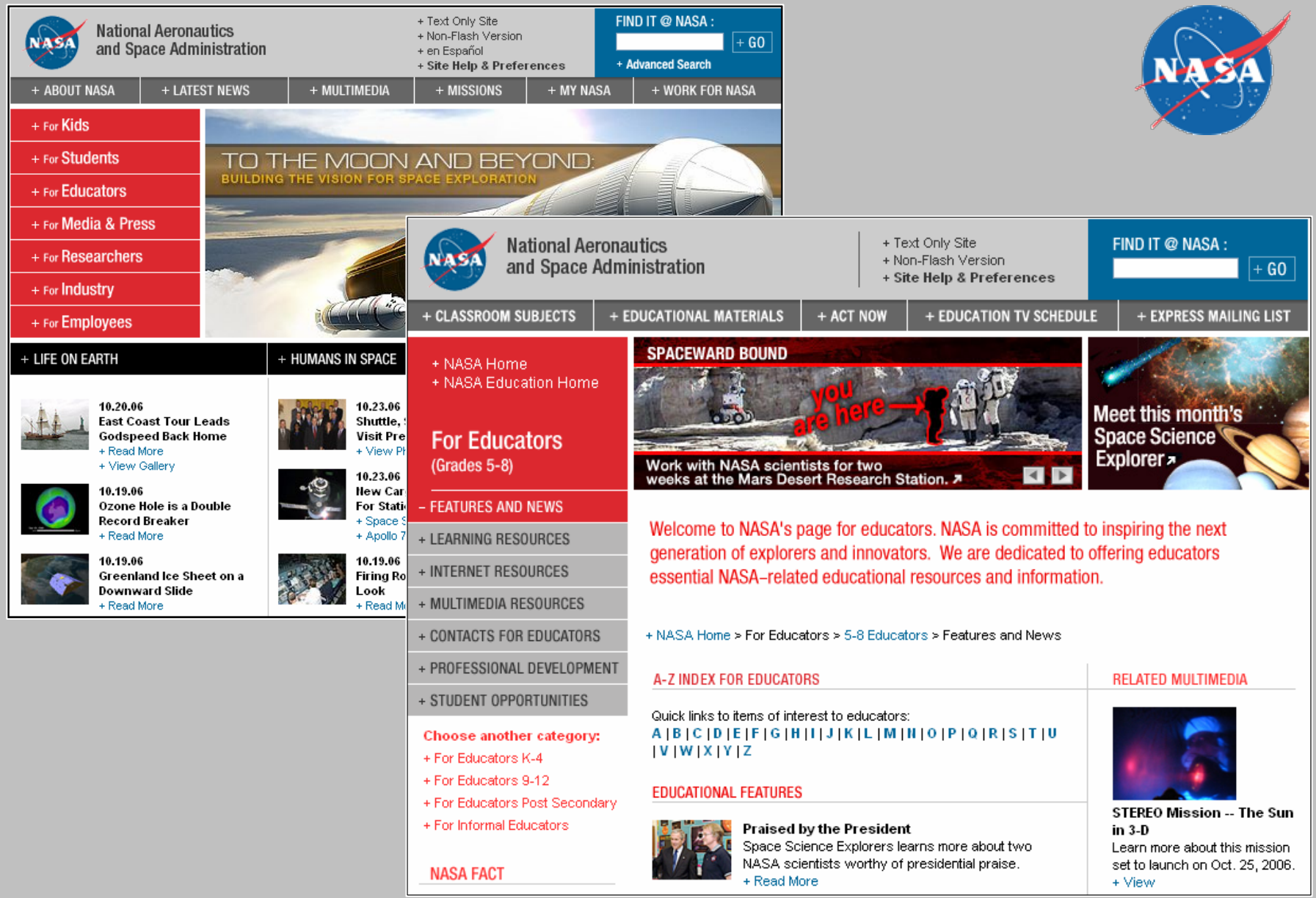
- **Programming includes:**
  - **Student Modules**
  - **Educator Professional Development Opportunities**
  - **Special Events**

eEducation Small Projects

Educational Media Archive

Central Operations of Resources for Educators

Educator Resource Center Network



NASA Educational Technologies Services (NETS)

Higher Education and Minority University Research and Education Projects

Presented by:
Chrissa Hall
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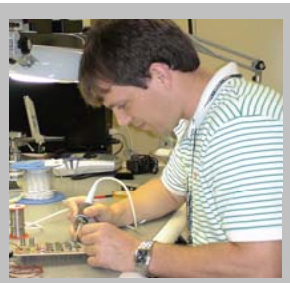


Higher Education Opportunities

http://education.msfc.nasa.gov

Undergraduate (Work/Study and Internships):

- Cooperative Education (Co-op) Program
- Undergraduate Student Research Project
- Marshall Space Grant Research Project
- Society for Hispanic Engineers Scholars Project
- NASA Academy
- American Indian Higher Education Consortium Research Experience
- Minorities in Science and Engineering
- Student Volunteer Services

Graduate:

- Harriet Jenkins Pre-doctoral Fellowship Project
- Graduate Student Researchers Project

Post-Doctoral:

- NASA Post-Doctoral Project

Faculty:

- NASA Faculty Fellowships
- NASA Administrator's Fellowship Project
- Visiting Researcher Exchange and Outreach Project

Competitions:

- Great Moonbuggy Race
- University Student Launch Initiative

Scholarships:

- Michael P. Anderson Summer Outreach
- Mi Futuro (My Future)
- Motivating Undergraduates in Science and Technology

Cooperative Education (Co-op)

http://coop.msfc.nasa.gov

Co-op is a *cooperative* agreement between NASA and an accredited university to allow qualified students the opportunity to alternate college-level academic study with full-time NASA work experience (which leads to full-time employment with NASA per a student's successful completion of the Co-op requirements and the ability to hire by a NASA Center).

Requirements:

- **Be a US Citizen**
- **Be enrolled in the University's Co-op Program**
- **Have a good scholastic standing (Cumulative GPA 2.9)**
- **Attend an Accredited University**
- **Have completed at least 30 semester hours for undergraduate opportunities or 1 semester for graduate opportunities**
- **Ability to work a minimum of three alternating semesters while a Co-op**

Cooperative Education (Co-op)

Center Overview:

- Center Allocations: 48 headcount
- Salaries and tuition reimbursement funded by Office of Human Capital
- Allocations authorized and dispersed by Associate Director
  - Based on core competency needs of the Center
  - Based on critical skill needs of the Center
  - Future attrition
- Office of Human Capital manages distributed allocations
- Request co-op slots through Directorate onto Office of Human Capital, Academic Affairs Office
- Co-op Office works with Directorate level in selections and placement of students
- More than half of allocations are technical
- Few business/professional and clerical
- Currently co-op students represent 21 schools and 14 states

Cooperative Education (Co-op)

Selection Process:

- Hiring selections are primarily recommended by the co-op office and recruiting team.
  - For unique, specialized co-op slots, hiring manager is involved
- Unwritten dress policy of business professional
- All students report for their 1st Day of work at MSFC on the same day.
  - Receive a Security; Safety; and HR briefing - (2 – 3 hours)
- Students are assigned a mentor and an administrative officer to assist with professional and work related issues/concerns and training.
- Co-op orientation scheduled within two weeks of EOD Orientation includes an Ethics Briefing by an MSFC Attorney
- Co-op Luncheon scheduled within two weeks of EOD

Cooperative Education (Co-op)

Promotion Process:

Promotions are based on the following:

- school's co-op office –a certification in writing that the student has moved into higher classification category.
- student's official transcript
- Satisfactory work performance memo/email from student's supervisor
- Overall GPA of 2.9 or better.

Note: Promotions are only initiated after a student Returns To Duty (RTD) and all the above items have been confirmed.
Promotions are not initiated while a student is on Leave Without Pay (LWOP) or at same time of RTD.

- A student cannot be on LWOP for any longer than 18 months each school rotation. LWOP beyond 12 months is discouraged, but is allowed up to 18 months on a case by case basis.

- Students are required to complete the following each semester:
  1. Student work schedule form
  2. Student rotational schedule form

Cooperative Education (Co-op)

Evaluations & Recognitions:

- Co-op Office requires the following work reports *each work term*:
  - Supervisory Evaluation
  - Student Work Period Report

- Samples of both reports are provided to new co-ops during orientation so they will know upfront how they are being evaluated.

- MSFC emphasizes *attitude*, *respect*, *work ethic*, *protocol* and *inappropriate/appropriate behavior,* as much as *GPA* and *job performance*.

- Personnel issues centered around poor evaluations and GPAs are typically coordinated through our Employee Relations Office in coordination with the Office of Chief Counsel.

- MSFC recently implemented a revised student agreement reviewed and approved by our Legal Staff.

- Co-op Awards: Time off & Monetary; Funding provided by student's assigned organization

Cooperative Education (Co-op)

Conversions:

- Average 10 graduates and six co-op conversions per year.
  - MSFC typically extends offers to all graduating co-ops.
  - Retaining co-ops has become more challenging (competitive salaries, not fitting in with the culture/environment, location of job).

- Co-op Conversion Allocations are approved by Center Management including Directorates:

  Approval based on:
  - Critical skill needs
  - Competency needs of the Center
  - Good Fit
  - GPA
  - Successful completion of the co-op program requirements

- Staffing Unit extends co-op conversion offers

  Target goal: 6 - 9 months from student's graduation.

Cooperative Education (Co-op)

Future Initiatives – Target Implementation 2008:

- Formal Cooperative Education Career Development Path
  - Provides for structured and required training
- Employee Performance Communication (EPCS) for Student Trainee
- Enhanced Rotational Assignments
- Individual Development Plans
- Work-term presentations
- One Co-op/One PRIMARY Mentor – Allows for consistent source of support
- Option of one back to back rotation – Spring/Summer or Summer/Fall during co-op program

Helpful Hints - Interns/Co-ops

- **Plan for effective supervision – The quality of supervision can make or break an internship or a co-op program.**
  - Make yourself available – frequent contact is a must for survival
  - Create learning objectives at the start of each work-term
    - Develop quality and meaningful work assignments for students
    - Involve students in special projects
    - Identify goals
    - Timeliness and outcomes up front
    - Purpose and expectations must be understood by both parties
  - Provide a job description upfront so that student can see seriousness and value for the tasks provided during work-term
  - Create an orientation plan within the Directorate/Department/Branch for new students reporting to work
  - Clearly communicate expectations for behavior and performance at the beginning of the work –term

Tips for Successful Student Employment Programs

- Keep in touch when students go back to school
- Make the students feel included
- Keep students BUSY
- Responsibility – Give an ever-increasing amount of responsibility in work assignments (many supervisors underestimate what a student can do)
- Vary the experience
- Develop Professionalism – Human relation skills, personal appearance, ability to make decisions
- Develop Loyalty -Students who have excellent work experiences feel good about the employer – GOOD EMPLOYER IMGAGE –

This is the best PR tool that an employer can have on college campus!

FINALLY – Get to know the characteristics of Gen Y

Americans born 1977 to 2002

Top 10 Reasons to focus on Student Employment Programs

- Cost-effective recruitment, training and labor
- Identifies prospective employees to meet future staffing needs
- Opportunity to recruit highly-motivated, well-trained professionals
- “Mentoring” experience for young employees
- Brings new talent and fresh ideas into the work place
- Brings state of the art information, technology and skill to Center
- Establish/enhance university relationships
- Demonstrates the Center’s commitment to education
- Employee loyalty
- Train an employee the way you want the job done

Helpful Links

- **EXPRESS mailing list**, www.nasa.gov/education/express - Generates announcements about various, ongoing educational projects sponsored by NASA Headquarters.

- Student **PODCASTS** available at www.nasa.gov/nso - NASA Student Opportunities podcast series that connects high school and college students with learning opportunities inside the Agency.

- **STUDENT INTERNSHIPS** for High School and College students http://education.msfc.nasa.gov- The various opportunities available at NASA field Centers including MSFC are provided online, under the links "Higher Education" and "Other Educational Opportunities." Majority of internships are sponsored by NASA Headquarters and managed by various field Centers. Students apply directly to Headquarters throughout certain times of the year.

- **STUDENT VOLUNTEER -** http://education.msfc.nasa.gov/docs/034.htm

- **COOPERATIVE EDUCATION** http://coop.msfc.nasa.gov **-**

BACK-UP CHARTS

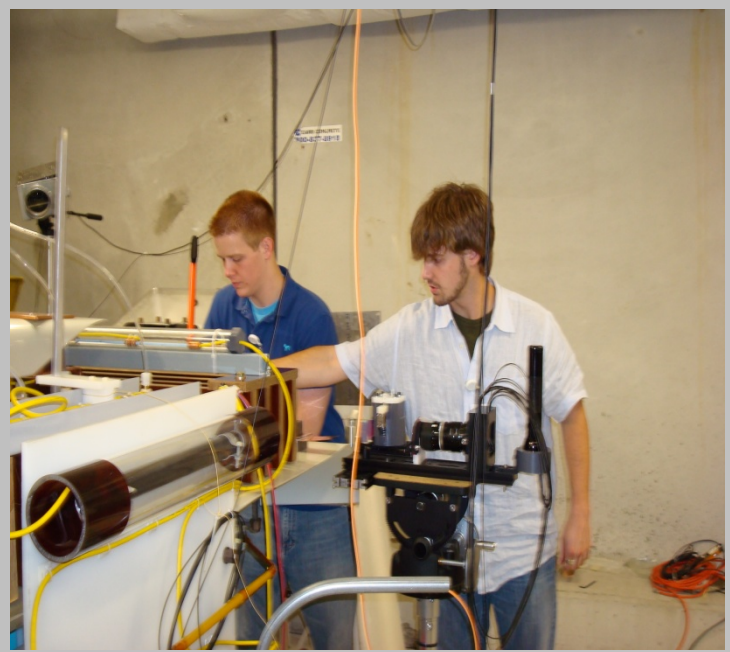
NASA Undergraduate Student Research Project (USRP)

USRP offers undergraduates across the United States mentored research experiences at the NASA centers.

The objectives of the project are:

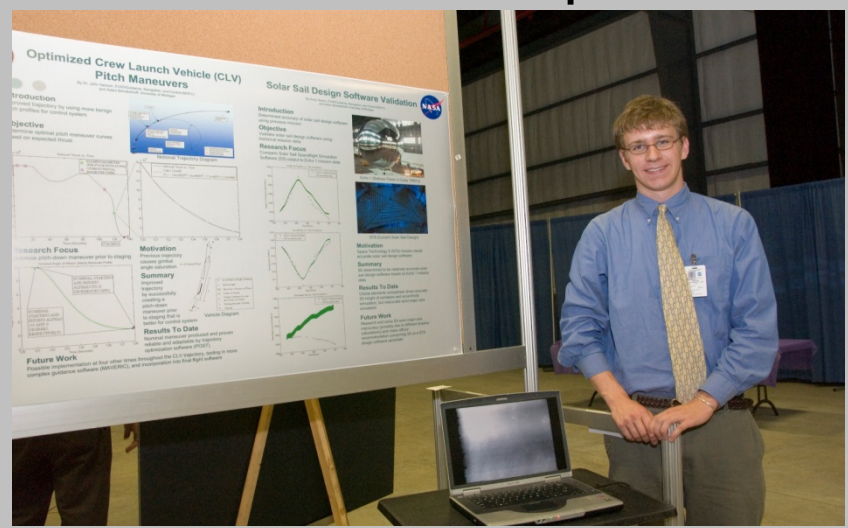
- provide hands-on, challenging research experiences that stimulate continued student interest in the fields/disciplines aligned with NASA's research and development mission.
- build a national program bridge—from existing NASA K–12 Education Program activities to NASA Higher Education Program options.
- extend and strengthen NASA's commitment to educational excellence and university research.

MSFC Hosted 16 interns during summer 2007.



Marshall Space Grant Research Internship Project (MSGR)

- Provides 10-week summer internships to undergraduate and graduate students for the development and transfer of applications in aerospace research.
- Students submit applications to their Space Grant Consortia. MSFC mentors select from accepted applicants.
- 18 interns funded by 9 Space Grant Consortia during summer.



NASA Exploration Systems Mission Directorate (NASA-ESMD) Space Grant Internship Program

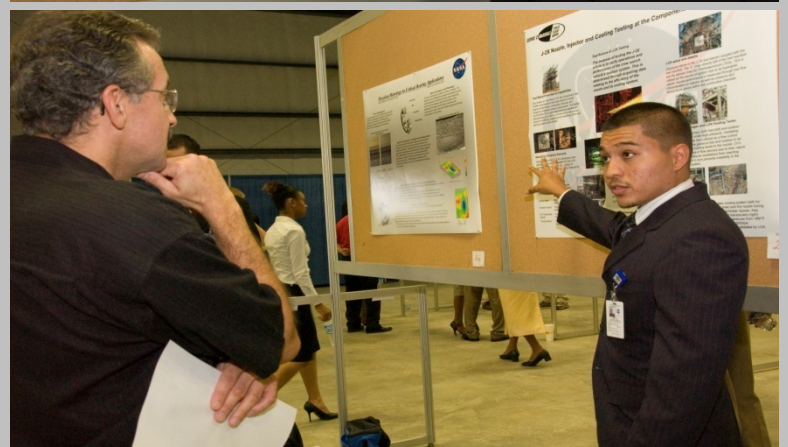
- Ten-week summer session or part-time academic year placement provides students ESMD-relevant work experience in industry or at a NASA Center to engage in hands-on engineering projects with a mentor.

- MSFC hosted 18 interns during summer 2007.

- 14 universities were represented.

Society for Hispanic Professional Engineers Summer Scholars

- Competitive internships designed to increase opportunities for Hispanic scholars to gain hands-on NASA experience.
- STEM majors selected
- From Hispanic Serving Institutions.
- 7 internships provided annually. Awardees are selected by SHPE.

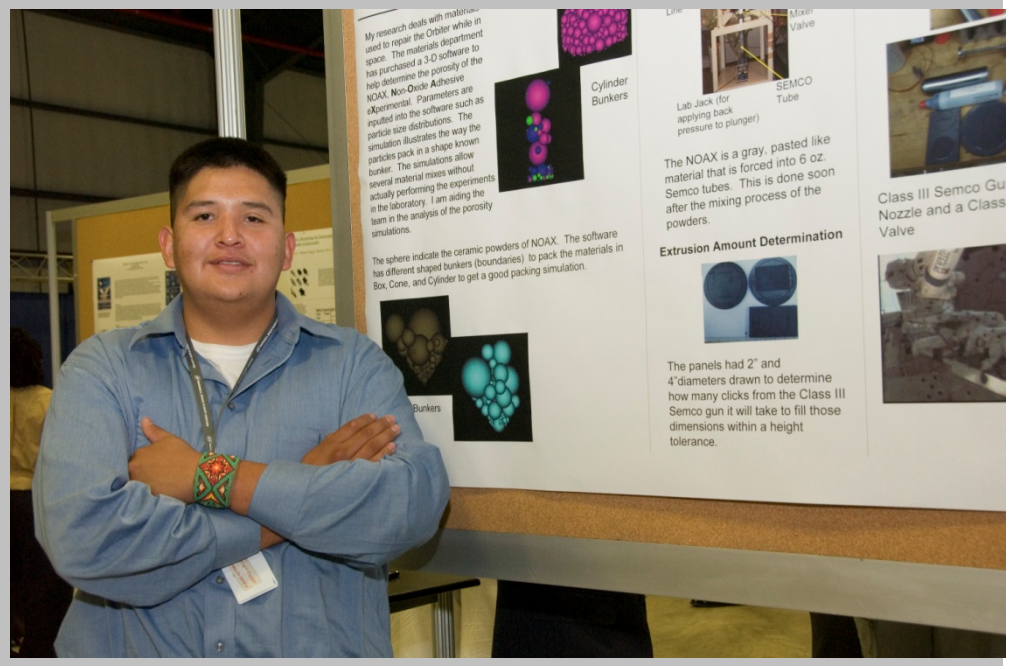


NASA Academy

- NASA Academy is an upper-level undergraduate and graduate student 10 week resident research and leadership project guiding students toward NASA Careers.
- It is a senior internship opportunity for students who have previous project experience, preferably at a NASA Center.
- Over 450 students have graduated from NASA Academy programs at Marshall, Ames, Dryden , Glenn and Goddard.

Tribal College Scholars

- The American Indian Higher Education Consortium (AIHEC) sponsors summer internships at NASA centers for Tribal College students.
- MSFC has hosted 6 students and a faculty advisor from Navajo Technical College in 2006 and 2007.
- These students have interned in the Center for Advanced Manufacturing doing computer-aided drafting and rapid proto-typing.

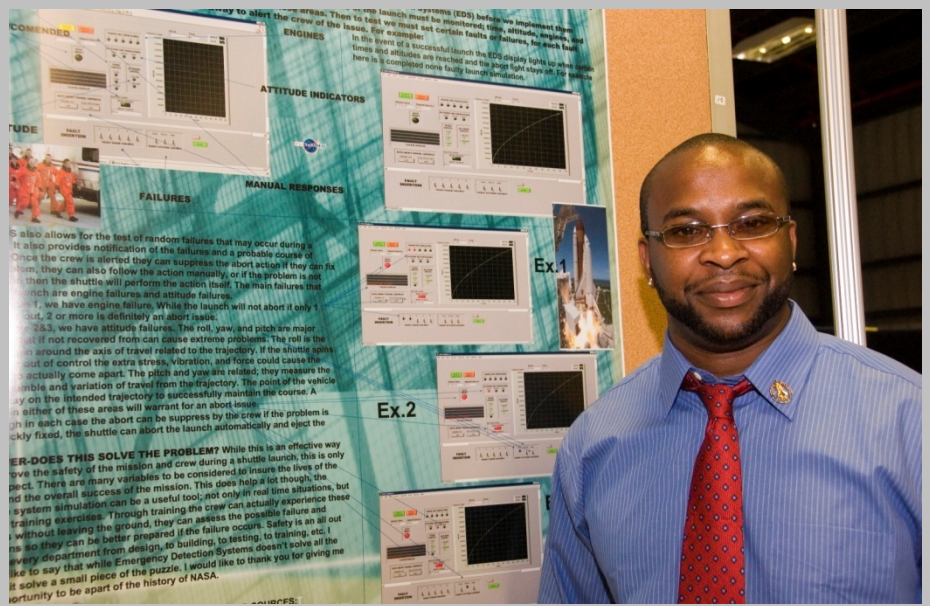


Minorities in Science and Engineering (MiSE)

- Provides competitive summer internships to Oakwood College, University of Alabama at Huntsville, and Alabama A & M University students majoring in STEM fields. Students participate in on-going research, career workshops and mentor area high school students during the school year.
- Goal is to train and retain pipeline students.

Student Volunteers

- Provides an opportunity for students to work with NASA employees utilizing skills they have while learning first hand about NASA careers.
- Most are high school students.
- Length of service varies; usually 10 weeks.



NASA Robotics Academy

- **The Robotics Academy is a 10 week residential research and education program in robotics, emphasizing teamwork.**
- **Students also visit world-class robotics laboratories.**

- **The Robotics Academy is a bridge from high school robotics experiences such as FIRST and Botball to NASA efforts including automatic rendezvous/docking, and lunar/planetary rovers.**

Harriett G. Jenkins Pre-doctoral Fellowship Project

- Provides highly competitive fellowships for graduate study to increase the pool of underrepresented groups, including women, minorities, and disabled persons with Masters and Doctoral degrees participating in the STEM workforce.
- Provides ‘hands-on” research opportunities at NASA Centers.
- More than 130 graduate students, from over 50 institutions have
- participated in JPFP.

Graduate Student Researchers Project (GSRP)

http://fellowships.hq.nasa.gov/gsrp/nav/

- **Fellowships for graduate study leading to masters or doctoral degrees in science, mathematics, and engineering.**
- **Goal: Increasing the number of highly trained scientists and engineers in aeronautics and space-related disciplines.**
- **Applicant Requirements**
  - Currently enrolled or accepted as a full-time graduate student in an accredited U.S. college or university.
  - U.S. citizen.
  - Must agree to participate in a NASA Center-based internship.

MSFC Faculty Fellows

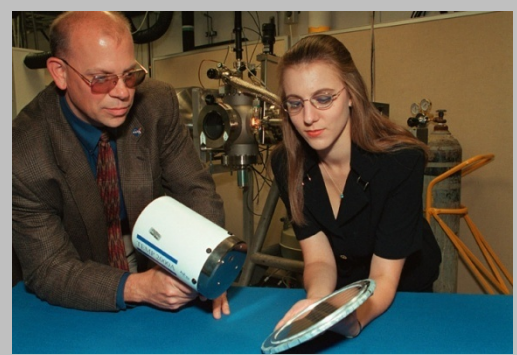
- Purpose: to nourish research partnerships which strengthen both NASA and institutions of higher education.
- Ten-week research assignments at MSFC for full-time faculty from accredited institutions of higher education.
- US citizenship is required.
- Faculty fellows are teamed with MSFC researchers.

NASA Administrator's Fellowship Project (NAFP)

- Provides fellowships for faculty from Minority Institutions to conduct research as NASA Centers and for NASA professionals to teach and conduct research at minority institutions.
- Since 1997, 89 fellows have entered into the project. MSFC currently has 4 NAFP faculty fellows and 3 NASA employees fellows.

Visiting Researcher Exchange and Outreach Project (VREO)

- Partnership between MSFC and Universities Space Research Association (USRA) to facilitate collaboration with academia and industry.
- Provides just-in-time expertise through long and short term onsite visitor exchange.
- Self-sustaining with MSFC labs providing funds for requested tasks in excess of $ 3 million.



Michael P. Anderson Summer Outreach

- Intensive 3-week project for high school students that provides problem-based learning experiences in robotics, mechanical disassembly and assembly, electronics, space propulsion, surveying (GPS), optics, bridge building and engineering mathematics.
- Developed by the AL A&M University School of Engineering and Technology to encourage students to pursue careers in engineering. Instructors include NASA employees, AAMU faculty, NASA summer interns and AAMU engineering majors.
- Tours MSFC and aerospace industries.
- Individual and team awards.

http://engr.aamu.edu/outreach

Mi Futuro (My Future)

- High school outreach program provided by Stillman College, Oakwood College and the Alabama Latin American Association to interest Alabama's Hispanic students in STEM careers.
- Features annual statewide Hispanic Youth Conferences.
- Two-week Summer Academy offered.
- Scholarships awarded to high achieving students.

Motivating Undergraduates in Science and Technology (MUST)

- Agency-wide scholarship and summer internship program designed to increase the number of minority students and women entering STEM fields.
- 93 students enrolled.
- Internships provided
- at all 10 NASA centers. 7 interned at MSFC during summer 2007.

Higher Education Opportunities

Center Overview – Summer 2007:

- 137 interns (includes 27 co-ops & 7 volunteers); 11 faculty
- Representing 36 states, the District of Columbia & Puerto Rico
- Representing 71 colleges & universities & 2 high schools
- 93 assigned to Engineering Directorate
- 23 assigned to Science & Mission Systems Office
- Disciplines: AE, ME, Computer Science, Math, Physics, Industrial Mgmt, Chemical Eng, School of Law
- 7 student volunteers (2 Local high schools – Buckhorn & Scottsboro)
  - GA Tech, Columbia School of Law, UAH & Calhoun Community College

Higher Education Opportunities

Learning Opportunities – Summer 2007:

- Administrative Officers Orientation – May 18
- Mentor Orientation – May 25
- Student Orientation – June 1
- Student Career Day/Luau – June 13
  - 4316/Activities Bldg – 8:00 – 3:00
- Business Etiquette Course (pilot- co-ops) July 24
- Chamber Student Intern Event – July 24
- Student Research Poster Day (Interns) – July 26
  - 4316/Activities Bldg – 1:00 – 3:00
- Center Tours – July 27
- Redstone Arsenal Tours – July 30

Local On-going Chamber Activities for students:

BRIDGES

http://www.emyrge.com/bridges.html